

DARY'S
Miscellanies Examined;
And some of his
Fundamental Errors
DETECTED.

BY

Authority of Ancient and Modern
MATHEMATICIANS.

The Ancient: *Euclid, Diophantus, Apol-*
lonius and Archimedes.

The Modern: *Xylander, Bachetus, Stevin,*
Albert Girard, Torricellius and
Regeomontanus.

To which is added,

A Task for Mr. Dary of his
own setting.

By *Robert Anderson.*

London, Printed for Philip Brooksby, next to the
Golden Ball, near the Hospital gate, in
West-Smithfield. 1670.



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DARY'S Miscellanies

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Fundamental Errours

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WHilst those *miscellanies* were printing, I met with two of Master Darys friends together, at their office in *Holborn* and they related to me that Master Dary had a Book in the press, in the Preface whereof he had a quarrel with me, and that he was resolved to vex me; my answer was, that if he gave me bad language I would lay it under my feet; but if he gave bad mathematicks I would return it to him again; therefore, all those calumnies, that bad and scurrilous language, (for such are their only demonstrations) either by him or by any of his crew in that preface given, or may be hereafter given in any of their writings, I shall take no further notice of, but shall ever lay them as dirt under foot; but I shall prosecute a close conviction of their erroneous principles in Geometry. That preface those

authors divides into two parts, the first against *Stereometrical Propositions*, the second in defence of the *ART of practical gaging*; and as they have little to say against the first, they have as little to say in defence of the latter, but in both I shall easily subvert their crippled arguments. To the first.

In the first page of the preface, Master Dary hath it thus; *in the tail of which Book there is a whole broad side.* Here he is outrageous because he was so perfectly confuted in the tail of the *guide to the young gager*: truly, as it was the confutation of the *ART of practical gaging*; it deserved no better preferment, than to be put in the tail of the young gagers guide: however, if I find Master Dary's understanding improved by my instructions there given, in these his *Miscellanies*; I shall to encourage him, commend him in the tail of this.

In the second page of the Preface, he hath these words, *the word frustum pyramide I cannot understand, But if he had said frustum of a pyramid, &c.* this complaint may consist of three parts, first, *frustum pyramide*; second, *I cannot understand*; third, *frustum of a pyramide*; if we compare the first with the last, we shall find them both of one signification, for *frustum* signifies a broken piece, therefore it is as well sense to say a broken pyramid, as to say a piece of a pyramid; one familiar example for many, a broken knife, as to say a piece of a knife. Such expressions are brief and well understood, both signifying the same thing, and he himself using the same expressions in the 31 and 32. 89 pag. of the *Art of practical gaging*: thus, *is the content of the frustum pyramid*, and in 29 page of that *Book of Art*, you have it thus, Master Michael Dary, an ingenious

nious Artist and practised gager : when it is the frustum of a Cylindriod : here we find him a giving himself a good character; and then telling us of a frustum of a Cylindriod, and in page 32 of that Book of Art, thus, *to cut this Cylindriod*, here we may observe this ingenious artist, how in one page he calls it a frustum of a Cylindriod, and immediately he calls the same solid a Cylindriod, so he makes no difference betwixt the part and the whole. Further, as for those mighty words of art, to wit, Cylindriod, prismoid and peripetasma; I shall say only this,

Oft have I known some men of no great parts,

Stuff up their mouths with mighty words of arts.

For his 2. complaint, that is, *I cannot understand*; it troubles me to hear it, yet I see his understanding mend a little, as we shall observe hereafter. In the same page, he is angry because that irregular frustum is cut into so many parts, if that do not please his worship he may take one of the other ways which cuts that solid into fewer parts; for there are four ways every one lesse work than other. But the gunner and his crew must be a shooting though but with pot-guns.

In the third page, our gunner gives the seventh prop. of the 5 of Diophantus a Broad-side; thus, *the stress of his argument is weak and infirm. Though we should grant Z equal to $\frac{3}{4}$, it is yet to demonstrate that Z is 3 and A 5.* A by supposition was an unit, then reduce them to one denomination, and that denomination being rejected, Z will be equal to 3, and A equal to 5. this he looks upon as an hard demonstration, *which I am not bound to tell him how to do*, saith he. Further, he dwindles to his Reader, hoping for glory and would know, *Whether this pro-*

position hath any relation at all to gaging. I answer yes, and argue thus, numbers have relation to gaging, this Proposition is of Numbers; therefore this Proposition hath relation to Gaging. Again, triangles have relation to gaging, this proposition is of triangles; therefore, this proposition hath relation to gaging. This prop. which he quarrels with, is the 7. of 5. of *Diophantus*, as is cited in the 106 page of *Stereo. Prop.* and seeing he hath so much immodesty as to say his arguments are weak and infirm, I shall set down the text as *Bachetus* hath it. *Esto primus 1N. secundus unitatum quotlibet, puta 1. & est productus eorum multiplicatione 1N. summa vero quadratorum est 1Q + 1. adde 1N. fit 1Q + 1N + 1 equalis quadrato. Esto latus ejus 1N - 2. fit quadratus 1Q + 4 - 4N. equalis 1Q + 1N + 1. & fit 1N. $\frac{3}{4}$ ad positiones, Erit primus $\frac{3}{4}$, secundus $\frac{5}{4}$: & abjecto denominatore, erit primus 3. secundus 5. & postulatis respondent. So then I have these witnesses on my side, 1. *Diophantus* the author of the proposition, 2. *Xylander*. 3. *Bachetus*. 4. *Stevin*. 5. *Albert Girard*. Those four commentators upon *Diophantus* every one of them setting it as above. 6. Truth it self, and it will prevail. So then, if Mr. Dary cannot bring better authority then these on his side for the stress of his argument; I shall conclude, that pride and ignorance is baffled; and where he saith I sling dirt in the face of *Van Schooten*. I may very well say he flingeth dirt in the face of these 5 authors, yea and in the face of truth it self. Further, had this 7. and 8. prop. of the 5 of *Diop* been observed by the proposer and resolver of that question, it is very likely it would not have been proposed by the one, nor resolved*

solved by the other; however, what I said concerning *Van-Schooten* and *des Cartes* is true and just, therefore no dirt. In the fourth page, our gunner hath more *fire-works*, to wit, his note for progressions is *invalid and of no force*. For saith he, *there is no need of unity for the first terme of this progression*. My answer is, that note for progression is of force and truth, and unity of use; thus, the question it self requires whole numbers; the seventh of the fifth of *Dioph.* finds whole numbers; therefore greater than an unit; therefore well limited.

The second part, in defence of the *Art of Practicall gaging*, and it begins in the fifth page, and there he telleth his Reader how he hath *been commended by divers artists in this City*. Here he appeals to men as ignorant, as himself is vain glorious. In the 6 pag. he flingeth dirt in the face of the printer, thus, *in which I see there are many press-faults*; that is false, they are the segment makers faults, for the segments are the complement of one to the other to 100000 &c. therefore no printers faults. In the sixth and seventh pages, he sheweth how to calculate a table of segments, and here his understanding mends a little, for he works pretty well since the last time I taught him; so then, as one mends in his Rules, so I hope the other will mend in his calculation, (with that instruction I formerly gave him) so we may expect a better table of segments some time or other. In the 8. page he again dwindles and would fain insinuate into the affection of his Reader; and make him believe that I did not know that there was a third &c. differences in the table of segments, to speak the truth, that table of segments was calculated to falsly that the first differences

rences did manifestly shew it; further, If Mr. *Dary* had known that way, or any other way better to examine Tables by, before he published those segments; more shame to him to publish such false tables, without examination. In the 9 and 10. pa. the Gunner has fire and gun-powder, viz. *know ye not that the Table for wine, ale and beer, are capable but only of the first and second differences.* If so, more shame to the Calculator that they have more diff. and they so much confusedly put. As for that Book entituled *A guide to the young gager*, I knew not the man nor heard of the Book untill a great part of it was printed, neither did I see one line of that part of it, till it was publickly exposed to sale. Thus have I passed through this fiery conflict, and have not heard the bounce of one gun, nor received any harme, which makes me conclude our gunner and his crew are as bad marks men, as they are segment makers, for he promised at the beginning of his preface to charge his guns and pepper me. Thus have I considered him as a Gunner with his Crew; now will I consider him as a Geometer, with his famous Companions.

*These famous men, whose true descent doth run
From aged Neptune, and the glorious Sun.*



AN
EXAMINATION
OF
Dary's Miscellanies.

IN the first page of the Preface, he saith, *Most whereof have lain by me many years: If so, I hope very true.*

1 In the second page of the Preface, saith he, *For although the sides thereof be continued, they would never be included or terminated in one point, as the Pyramide is; that is, the sides of a Pyramide are included in one point, which I deny, thus; a point hath no part, by 1 def. 1 Euclid. A Superfices (for such are the sides of a Pyramide) have length and breadth 5 def. 1 Euclid. That which hath no part, to include that which hath length and breadth, is absurd; that's a lumping point for an able Anylist.*

2 In the fourteenth page, saith he, *The 3 Angles of any Spherical Triangle being given, there are likewise three sides of another Spherical Triangle given, whose Angles are equal to the sides of the former Triangle.* Here the Gentlemen forgot to complement, and I presume in the next they will forget all good manners. Further, the sum of the sides of any spherical

rical triangle, are less then two semi-circles, Reg. 39. of 2. The sum of the three angles of any spherical triangle, are greater then two right angles, but less then six, Reg. 49. of 3. therefore the Rule is false, except the sum of the three sides be greater then two right angles; but the Rule is set down general, therefore a general error.

3 In page 21. we have it thus; *If a sphere be by a plain touch'd, and the eye be placed at the center of the sphere, then a right line infinitely extended from the eye to any assigned point in the spherical surface, shall project the assigned point upon the plain.* Here the Radius of the Sphere is taken to be infinite, for, saith he, then a right line infinitely extended from the eye to any assigned point in the spherical surface; but the plain is without the sphere, therefore beyond infiniteness it self, which is absurd: however this proves them to be infinite Projectors.

4 In page 29. at the 18th it is thus; *If a sphere be inclosed in a cylinder, and that cylinder be cut with plains parallel to its base, then the intercepted rings of the cylinder are equal to the intercepted surfaces of the respective segments of the sphere; that is false: For, Hemisphaerii superficies equalis est superficies curvae cylindri eadem ipsi basim, & eadem altitudinem habentis, saith Torricellius at the 18. Prop. de sphaera, & solidis sphaeralibus lib. prim. and as the whole, so the parts, by the 19. Prop. of the same.* Here we have a combat betwixt Torricellius and our Geometers: First, they say the intercepted rings of the cylinder are equal to the intercepted surfaces of the respective segments of the sphere. Torricellius proves, that the intercepted superficies of the cylinder, are equal to the intercepted superficies

fices of the respective segments of the sphere.

2. These Geometers say, if a sphere be inclosed in a cylinder, here we may make the Diameters of the base of the cylinder of any magnitude, greater then the diameter of the sphere, and yet the sphere be inclosed. *Toricellius* proves, that the cylinder and hemisphere must have the same base.

3. These Geometers regard it not, whether the sphere and cylinder are upright or inclining. *Toricellius* by construction makes them upright. Thus do these Geometers make solid superficies, for a ring is solid.

5 In page 33. they set down a rule for the sphere, and conclude it will hold in the spheroid; *this rule will also hold if it were the Frustum of a Spheroid, putting $d d$ equal to the fact of the right angled conjugates in the base.* That is false, by 21 of 1 of *Apollonius*, and 31 and 33 of *Archimedes* of conoid and spheroid; for the diameter of the base one way, or the right angled conjugates of the base the other, with the height of either, will not limit a spheroid, as the diameter of the base and the height doth a sphere. This very rule Crowns all their endeavours; for before they had made a point bigger then any superficies, a line longer then infiniteness, a solid superficies, but now they are come to an unlimited solid.

6 In page 39. they write thus; *But if such a solid have not its Zons made by circles or ellipses, but by four flat sides at right angles to the foresaid conjugates, then it is a prismoid; nevertheless, the rules before prescribed, hold to all intents and purposes; that is false to all intents and purposes at the first appearance; for if two right lines be at right angles,*
g'es,

gles, and they be at right angles with four plains, those plains will be the 4 sides of a Parallelepipedon, by the 2, 3, and 30 def. of 11 *Euclid*. a Parallelepipedon being calculated gradually, can have but a first difference, and not a second and third: But this is like the rest of these Famous Geometers works. Our Master Geometer telleth his Reader thus, *Most whereof have lain by me many years.* And in the Title Page he saith, they are brief Collections from divers *Authors*: If so, why so many Fundamental Errors? Further, seeing *M. Dary*, and his Companions will assert any thing, and demonstrate nothing, except they are required in print; therefore I desire them to demonstrate these six following assertions of their own, and shall call it

A Task for Mr. Dary of his own setting.

To wit:

1 The sides of a Pyramide being 31000. I desire *Mr. Dary* to give one point to include that superficies, as he asserts in page 2.

2 The three sides of a Spherical Triangle, being 6, 8, and 10 degrees, their sum 24 degrees, I desire *Mr. Dary* to give a Spherical Triangle, whose sum of the three angles are 24 degrees, as he asserts in page 14.

3 In the Gnomonick Projection, the Radius of the Sphere being infinite, and the arch from the touch point to the assigned point be 30 degrees, I desire *Mr. Dary* to extend a line from the center of that sphere, by the assigned point, to the

the touching plain, that is further then infiniteness, as he asserts in page 21.

4 If a Cylinder and Hemisphere be of one height, but the diameter of the base of the Cylinder be greater then, or equal to the diameter of that Sphere, and they concentrick, this Hemisphere is inclosed in that Cylinder; let that Hemisphere and Cylinder be cut with Plains parallel to their bases. I desire Mr. Dary to prove, that those intercepted rings of the Cylinder (that is solid rings) are equal to the intercepted surfaces of the respective segments of the Sphere, as he asserts in page 29

5 In a Spheroid, let 6 be the perpendicular height of the Frustum, 8 the diameter of the base, when cut by a Plain at right angles with the Axis; let 10 and 12 be the right angled conjugates in the base (as he calls them) when the cutting Plain is parallel to the axis, the altitude of the Frustum 4. I desire Mr. Dary to give one example in each, if but one; if more then one, to give them all; that is, to prove it a limited Proposition, as he asserts in page 33.

6 If two right lines, to wit, one 6, the other 8, be at right angles, and these two lines be at right angles with four Plains, the height of these plains may be 12. those will be the limits of a solid, which Euclid names a Parallelepipedon, at the 30 def. of 11. I desire Mr. Dary to prove such a solid to be a Prismoid, and to have second and third differences, as he asserts in page 39.

Now to commend him.

THose six Assertions of Mr. *Dary's*, may well be termed *A Task* for him for six daies; which Assertions being performed according to the Rules of Geometry, I shall ever conclude Mr. *Dary* to be great, yea greater; nay the greatest Geometer of all mortal men.

But if Mr. *Dary*, with the help of his Companions, cannot or will not fairly demonstrate these their Assertions, but still cavil and quarrel it out, I may well conclude, his or their Geometry is not; nor will not be worth taking notice of for the future; for that Miscellanea Riss-rass *having lain by him many years*; and we may be sure, often thumb'd over with much care and prudence, like an ingenious Artist, and a practised Gager; being his whole stock of Mathematical knowledge, is now made publick, to prove himself what he is, to wit, a Geometer full of errors, and a Mathematician altogether without demonstration; therefore I shall employ my idle time better then in confuting such unwise ridiculous Assertions; for this we may be sure of. that whatever Mr. *Dary* writes, will be full of Fundamental Errors.

Although I am well assured, that whatever Mr. *Dary* writes will be so full of Fundamental Errors, that it will not be worth taking notice of; yet seeing one deeply swears by his Maker he would have us never agree, because it will be good sport for them; and another of Mr. *Dary's* friends is desirous

desirous to see Paper Battels, therefore I shall the rather desist: However, if I take pen in hand again, I shall be as ready to bring them into the List, by examining their works, as they are desirous that we should make them sport. Further, Mr. Dary hath related to several of my acquaintance, that those his *Miscellanies* were published as a snare for me; and one of his Crew hath told me to my face, that he could be revenged on me, and never appear in it himself: I asked him how; He answered, he could hire a stab to be given for a very small matter: My answer to these two, and the rest of them is, I value the snares of one, the stab of the other, and the envy of the rest, no more then the dirt of my shoes; my seconds shall be *Euclid*, *Diophantus*, *Apollonius* and *Archimedes*, and my Weapons Truth and Demonstration.

FINIS.